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Credit market participation by women-owned small scale enterprises in Wa and Jirapa districts of the Upper West region of Ghana

Benjamin Musah Abu*[#], Paul Bata Domanban* and Samuel Sekyi*

*Department of Economics and Entrepreneurship Development, University for Development Studies,
P. O. Box 520, Wa, Ghana.

Correspondence: abmusah@uds.edu.gh, pdomanban@uds.edu.gh and ssekyyi@uds.edu.gh

Abstract

This study looks at owner, enterprise and credit institution characteristics that may influence access to credit, source of credit and the quantum of the credit by small scale enterprises operated by women. Literature so far has overly concentrated on access to credit by households in general. Those that focus on women do not usually look at women as entrepreneurs and how their entrepreneurial environments affect access to credit. This study in response investigates the theme of credit in a triple hurdle fashion. Primary data were collected from a representative sample of 250 women entrepreneurs using structured questionnaires. Probit model with sample selection and tobit model were employed in analysing the data. The results indicated that characteristics surrounding the entrepreneur and the enterprise such as entrepreneur's age, education and size of business among other economic activities affect access to credit. The results confirm that owner, enterprise and credit institution characteristics influence access to credit as has been established in literature. The study recommends that the Business Advisory Centre of the National Board for Small Scale Industries should be more proactive and well-resourced to enable it perform its core mandate of facilitating the growth of micro and small scale industries to ensure access to credit.

Keywords: *Access, credit, women, small scale enterprises, triple-hurdle approach*

1. Introduction

Small and medium scale enterprises (SMEs) have been viewed as one of the development poles of poverty stricken households in developing nations. The significant contribution of these enterprises to economic growth, savings, social cohesion, employment creation and local development cannot be overemphasised.

It has been observed that these enterprises have supported numerous socioeconomic transformations in developing economies. According to Bhasin and Akpalu (2001), small scale enterprises (SSEs) constitute an integral part of the overall industrial sector and play an active and significant role in the growth and development of these countries. Gunu (2004) argues that SMEs are the lifeblood of most economies. In Sub-Sahara Africa, SMEs have been observed as engines that sustain growth for long term development through the gradual roles in industrial development and transformation of the economies, meeting the needs of internal demand for services, allowing for increased specialisation and providing the input requirements of larger firms (Fjose et al., 2010).

According to the Asian Development Bank (2014), SMEs are the backbone of the national economies in the countries of Asia and the Pacific. For example, in Asia, SMEs accounted for 98% of all enterprises, 66% of the national labour force and contributed 38% of the gross domestic product (GDP) between 2007 and 2012. They are also observed to stimulate trade as 30% of total export value on average was recorded during the same period. Micro and small scale enterprises (MSEs) are reputed to be behind most of the socioeconomic transformation in South East Asia (Kimuyu and Omiti, 2000). In Latin America, Berry (2002) noted that the performance of SMEs sector is pivotal to the overall economic performance especially in the area of employment creation and income distribution. These various recognitions of the role of SMEs have led to the formulation of policies by both international institutions and national economies to create favourable environment for these enterprises to thrive.

In Ghana, the private sector is the largest employer, employing 93% of the economically active labour force (GSS, 2012). According to Mensah (2004), about 90% of enterprises in the private sector are registered as micro, small and medium enterprises (MSMEs). The definition of these MSMEs is largely based on the number of employees (Kayanula and Quartey, 2000). However, definitions of MSMEs usually combine number of employees and assets. In this regard, the National Board for Small Scale Industries (NBSSI)¹ provided a working definition as follows: micro enterprises are those enterprises with workforce of at most five with fixed assets (excluding land and building) not exceeding the value of US\$10,000; SSEs are those with workforce of between 6 and 29 people with fixed assets (excluding land and building) not exceeding US\$100,000 and medium enterprises are those employing a workforce of between 30 and 100 employees with fixed assets of up to US\$1,000,000.

The Ghana Statistical Service (2012) estimated that nearly 40% of gross national income (GNI) is attributable to informal sector activity where these enterprises

¹ *The NBSSI is a public sector organisation established in 1985 with the mandate of promoting the growth and development of micro and small scale enterprises in Ghana.*

dominate and asserted that small enterprises are more able to propel growth in the economy than large ones due to their numbers and niches they occupy in the national economy. Their ability to create employment is unparalleled due to their labour intensive technologies. According to Abor and Quartey (2010), SSEs in Ghana contribute about 85% of manufacturing employment, about 70% to GDP and in general account for about 92% of businesses. Apart from contributing to employment generation and economic growth, SSEs help resolve rural-urban migration and also strengthen industrial inter-linkages and integration through the production of intermediate products for use in large scale companies (Sekyi et al., 2014).

The role of women in the Ghanaian economy is more eminent now than in the past. That is, women's involvement in economic activities has increased tremendously (Amu, 2005). The traditional role of women as home managers is gradually fading out in favour of active involvement in the labour market. The engagement of women in the establishment, management and the success stories behind SMEs is perhaps one of the most pervasive pointers to the role of women in national economies. According to Dollinger (1999), women have been starting businesses at a rate more than twice that of men. Moore (1990) indicates that a quarter to a third of all businesses globally is owned by women. Despite the increase in women-owned businesses, women entrepreneurs are still disadvantaged, especially in the area of support systems and start-up funds (Hisrich and Peters, 1998).

From the literature, women have been observed to have limited access to credit. For example, Fletschner (2008) observed that women are more credit constrained than their men counterparts. Bhasin (2009) acknowledged that women have limited access to essential resources including credit. Hisrich and Peters (1998) in comparing sources of finance between men and women indicate that the main sources of finance available to women entrepreneurs are personal assets, savings and personal loans as compared to their counterparts who have at their disposal personal assets, savings, bank financing, investments and loans from friends and families. Mensah (2004) indicates that financial institutions shy away from granting credit to women entrepreneurs operating SMEs due to the high default rates and risks associated with such enterprises. It is imperative to note that financial institutions do not just lend credit or deliberately deny access to credit. Often the decision to grant credit is dependent on at least certain characteristics of the borrower and the business environment. It is against this background that this study looks at owner and enterprise-specific characteristics that might influence access to, source of and amount of credit acquired by women entrepreneurs in the Wa and Jirapa districts of the Upper West region of Ghana.

In Ghana, poverty is still an ill that ravages households especially the rural dwellers. However, the Upper West region is the worst hit having one of the least

average annual per capita income of GH¢3,015.7² as against the national average of GH¢5,346.9 and the least annual per capita expenditure of GH¢1,476 as against the national average of GH¢3,117 (GSS, 2014). Also, unemployment in the region (6.5%) is higher than the nation's average of 5.2% (GSS, 2014). As has already been stated, the development of SMEs in the region represents a strong hope of breaking free from poverty.

Women represent 51.4% of the region's population. Again, 54.1% of the private informal sector operators in the region are female (GSS, 2012). This is in line with the fact that females are slightly more likely to be self-employed (69.3%) than males (60.0%) in Ghana (GSS, 2012). Based on these facts, women are seen as relatively more industrious than men in the operation of SMEs and hence justifies why concentration should be placed on analysing women entrepreneurs. The Wa and the Jirapa districts were purposively selected for the study because they represent the extreme ends of the spectrum of the activities of SMEs in the region as indicated by the NBSSI. That is, Wa municipality has the highest activities of SMEs in the region with the least activities found in the Jirapa district.

The study addresses the following questions: What are the determinants of credit market participation by women-owned small scale enterprises? What influences their choice of credit sources? What are the factors that influence the amount of credit obtained? In finding responses to these questions, it has been realised that though several studies have been done on credit, hardly has studies implemented an approach that addresses these three thematic issues of credit demand in a three-tier approach. Mpuga (2008) came close to capturing these three thematic areas but failed to incorporate the source of credit. Also, most studies have concentrated on household demand for credit irrespective of their occupational engagements. Therefore this study departs from previous studies by using a triple hurdle approach to account for all the three thematic issues related to credit demand. A further contribution is the exploration of women entrepreneurs engaged in SSEs instead of household demand where males have dominated the literature. The purpose is to explore how the characteristics of women and their enterprise-specific factors affect their participation in the credit market, their choice of credit source as well as the amount of credit using the triple hurdle approach.

The rest of the paper is organised into four sections namely review of literature, methodology, presentation and discussion of results, and conclusion and recommendations.

² The exchange rate as quoted by www.xe.com as at 17/10/2013 (the last date of data collection) was US\$1.00 = GH¢2.177.

2. Literature review

The functioning of the credit market in developing economies is generally identified to be bedevilled with incomplete markets and imperfect information (e.g., Atieno, 2001 and Seck, 2014). Akerlof (1970) was the first to formalise the functioning of the market in the presence of information asymmetry. This new thinking as observed by Atieno (2001) represented a great attempt of diverging from the dominant paradigm of competitive equilibrium. However, Stiglitz and Weiss (1981) popularised this theoretical thinking by adapting it to the study of the credit market hence representing the pioneering work on this new theoretical development. This first attempt focused on providing explanations to the workings of the credit market leading to the creation of credit rationing. They noted that credit rationing arises from adverse selection and moral hazard and these two are influenced by interest rates which plays a dichotomous role of screening and sorting potential borrowers. According to Atieno (2001), adverse selection occurs as a result of financial institutions searching and screening for borrowers with the highest likelihood of repayment. As a consequence, interest rates are relied on as a means of screening and this attracts borrowers willing to pay high interest rates with greater risks of default.

The pioneering work of Stiglitz and Weiss (1981) has awakened significant amount of follow-up studies (e.g., Bell, 1990 and Besley, 1994) and has established the platform for later empirical works. For example, Bell (1990) premised on the credit rationing proposition shows that credit rationing stems from the foresight of loan default arising from incomplete information or imperfect contract enforcement. Besley (1994) in support analysed the rural credit markets fraught with market failure. He observed that these market failures in the credit markets are the prime consequence of credit rationing, adverse selection and moral hazard.

Atieno (2001) observes that costly imperfect information, risks and market segmentation are the benchmark characteristics surrounding financial markets in African economies with the concomitant effect of credit rationing. Notable areas of empirical studies that have developed after these pioneering works include demand for credit (e.g., Zeller, 1994; Atieno, 2001; Seck, 2014), loan repayment performance (e.g., Wongnaa and Awunyo-Vitor, 2013; Anigbogu *et al.*, 2014) and loan default (e.g., Awunyo-Vitor, 2012; Munene and Guyo, 2013). The demand for credit literature for example proliferated on the foundation of credit rationing. Atieno (2001) attests that credit rationing in credit markets presents a situation where among loan applicants exhibiting similar characteristics, some applicants' application are successful while others fail even if they offered to pay higher interest rates.

Empirical studies have sought to understand the mechanisms explaining why some receive credit and others do not and why some would seek credit from formal sources while others seek credit from informal sources. These studies are underpinned by the

presence of information asymmetry especially in the formal credit market leading to the rejection of some borrowers' credit application not based on insufficient funds but due to credit rationing arising from problems of loan administration, high transaction costs and the risk of default (Aryeetey, 1996). This breeds the informal credit market to cater for those who are rejected, with the characteristic of the inability to meet existing demand due to inadequate funds (Atieno, 2001). Atieno (2001) further notes that the formal and informal markets operate side by side to serve borrowers with different characteristics due primarily to credit rationing caused by market failure and information asymmetry.

Generally, studies that examine credit demand of households employ two characteristics namely household and institutional characteristics. Those that examine SMEs credit demand apart from these two characteristics add enterprise-specific characteristics. Household characteristics identified by most studies include age, gender, education, household size, income and farm size. The effect of age has been inconclusive. Kimuyu and Omiti (2000), Mpuga (2008), Messah and Wangai (2011), Sekyi *et al.* (2014) estimate a positive relationship of age and credit access implying that older people are more likely to access credit. Sekyi *et al.* (2014) for example opined that older people possess the ability to accumulate assets which could serve as collateral, hence making them creditworthy as compared to younger ones. Also, Mukiri (2008) argues that older entrepreneurs possess more work experience, education, wealth and social contacts hence more likely to access credit. On the other hand, Barslund and Tarp (2008), Eze *et al.* (2009), Togba (2009), Tang *et al.* (2010) and Amao (2013) found evidence of a negative influence of the age of a borrower on credit access. Barslund and Tarp (2008) argue that older people demand less credit because they appear more settled and have lesser propensity to take new and capital demanding initiatives. Eze *et al.* (2009) stress risk aversion and less productivity of older people as responsible for this evidence. The life-cycle hypothesis may also be employed to explain this evidence. Young people set sights on higher incomes to accumulate wealth and hence are expected to save and borrow for investments as compared to older people.

Generally, females have been found to have limited access to credit as compared to their male counterparts. Mpuga (2008) and Amao (2013) have confirmed this assertion with their evidence. However, Tang *et al.* (2010) and Akudugu (2012) have found counter evidence. This makes the literature inconclusive. In general, many studies have found strong positive associations between credit demand and education (see Kimuyu and Omiti, 2000; Mpuga, 2008; Messah and Wangai, 2011; Akudugu, 2012; Sekyi *et al.*, 2014). Nwaru *et al.* (2011) attribute the evidence to the ability of educated people to take risks as compared to uneducated ones while Akudugu (2012) believes it is attributed to their ability to read and make better applications to financial institutions.

Household size is nearly unanimously a positive predictor of credit access (see Chen and Chivakul, 2008; Eze *et al.*, 2009; Tang *et al.*, 2010; Sekyi *et al.*, 2014). Chen and Chivakul (2008) for instance stress the fact that larger households are more likely to have a higher dependency ratio, hence increasing their credit needs. Mpuga (2008) however contradicts these evidence. Income is also nearly unanimously a positive predictor of credit access (see Togba, 2009; Nwaru *et al.*, 2011; Messah and Wangai, 2011; Amao, 2013; Sekyi *et al.*, 2014). However, Jeiyol *et al.* (2013) estimated a negative effect. The effect of farm size has been observed to have a near unanimous positive effect on credit access. Barslund and Tarp (2008), Akudugu (2012), Jeiyol *et al.* (2013) and Amao (2013) have all estimated a positive effect for farm size.

Key credit institution-specific factors are usually interest rate, distance to financial institution and other terms of the credit (Mpuga, 2008). It is quite conclusive that interest rate is a negative predictor of credit demand (see Eze *et al.*, 2009; Tang *et al.*, 2010 and Nwaru *et al.*, 2011). Also, distance to credit source is also a negative predictor (see Akudugu, 2012). Key enterprise-specific factors in the literature are age and size of enterprise and business ownership. The impact of enterprise age and size on the demand for credit is positive (Kimuyu & Omiti, 2000 and Kiboki *et al.*, 2014). Kiboki *et al.* (2014) explain that as enterprises grow and expand they need more financing and that a growing enterprise has a good sign of sustaining loan repayment. Kimuyu and Omiti (2000) and Kiboki *et al.* (2014) have found that sole proprietorship SMEs are less likely to access credit. Kimuyu and Omiti (2000) for example explain that sole proprietorships are less prone to risk taking. Mukiri (2008) introduced the dimension of entrepreneurial orientation and estimated its effect on credit access. He observed a positive relationship between SMEs' entrepreneurial orientation and credit access.

3. Methodology

3.2 Study area and data

The population of the Upper West region according to the 2010 Population and Housing Census stands at 702,110 representing 2.8% of the total population of Ghana (GSS, 2012). The region has 11 political/administrative districts. The study was conducted in the Wa and Jirapa districts in 2014. With the help of a structured questionnaire³ primary data were collected from 250 women entrepreneurs engaged in SSEs. The selection of respondents was done in two stages. Stage one was the listing of women who owned SSEs and had demanded for credit in the 2013 accounting year. This implies that entrepreneurs who did not demand for credit were not considered. In the process, 659 SSEs (422 from Wa and 237 from Jirapa) were recorded and

³ The questionnaire is attached as an appendix.

thus formed the target population. Due to time and logistical constraints, 250 SSEs (representing about 40% of the 659 SSEs) were taken as the sample size. Thus, approximately 160 from Wa and 90 from Jirapa formed the sample size. Stage two involved the application of simple random sampling technique to draw the 250 SSEs as respondents from the list of 659 SSEs in stage one. The representative samples of 160 and 90 from each district were taken to reflect the disparity in the number of SSEs. In other words, the sample sizes were proportionate to the number of SSEs. The questionnaire solicited data on access to credit, credit source, credit amount, age of the entrepreneur, education level of the entrepreneur, type of business ownership, type of business activity, age of business, size of business and membership in entrepreneurs' association or group.

3.2 Methods of analysis

Literature on credit market participation analyses three thematic issues: whether an individual gets credit (which is a discrete outcome), the source of the credit whether formal or informal (which is a discrete outcome) and the amount of credit obtained (which is a continuous outcome). These three thematic issues of credit demand present three distinct hurdles that a researcher would have to overcome. However, studies typically adopt either one step or two step analytical approaches. Studies that adopt the one step approach usually use qualitative choice models to determine the probability of accessing credit or the probability of accessing credit from either formal or informal sources (see Eze *et al.*, 2009 and Togba, 2009). The binary logit or probit and the multinomial logit or probit are the most widely used models in the one step approach. For those that adopt the two step approach, in the first stage they use a discrete dependent variable (access to credit) and use a continuous dependent variable (credit amount) at the second stage (see Mpuga, 2008 and Tang *et al.*, 2010). In using the two step approach, Sekyi *et al.* (2014) used bivariate probit model for both access to credit and source of credit.

The entrepreneur's choice problem thus consists of maximising utility from the amount received as credit subject to the constraints of securing credit and the source of the credit. This specifies the running of three separate regressions: first hurdle (access), second hurdle (source) and third hurdle (amount). Analytically, hurdles one and two could be dealt with by categorical choice models while the third could be handled by a censored model or truncated model depending on the data. Since there is no single model to analyse the three concurrently, often hurdles one and two are analysed simultaneously while the third is treated as a standalone model. Generally, the two-step approach is used to analyse hurdles one and two simultaneously. The widely used models under this approach are the Cragg's double hurdle model and the Heckman sample selection model. The choice between these two models depends on which one fits the data under consideration. However, since access and source

variables are all discrete, these two models are not implementable to the situation because they all make use of a continuous dependent variable in the second step. Instead, the probit model with sample selection (implemented as heckprobit) which is an extension of the Heckman model to deal with these special cases is used to analyse hurdles one and two simultaneously. The model estimates probit models in the first and second stages. It also provides a likelihood ratio test of independence between the two equations.

$$y_j^* = X_j\beta + u_{1j} \quad (\text{latent equation}) \quad (1)$$

Such that we observe only the binary outcome

$$y_j^{probit} = (y_j^* > 0) \quad (\text{probit equation}) \quad (2)$$

The dependent variable, however, is not always observed. Rather, the dependent variable for observation j is observed if

$$y_j^{select} = (Z_j\gamma + u_{2j} > 0) \quad (\text{selection equation}) \quad (3)$$

Where y_j^* is a latent variable of source of credit, X_j is a vector of regressors, β is the corresponding vector of parameters and u_{1j} is the associated error term. y_j^{probit} is an observed binary variable of credit source representing 1 if credit is received from formal source and 0 otherwise. y_j^{select} is a binary outcome representing 1 if entrepreneur has access to credit and 0 otherwise, Z_j is a vector of regressors, γ is the corresponding vector of parameters and u_{2j} is the associated error term. The assumptions of the error terms are:

$$u_1 \sim N(0,1)$$

$$u_2 \sim N(0,1)$$

$$\text{corr}(u_1, u_2) = \rho$$

When $\rho \neq 0$, standard probit techniques applied to the first equation yield biased results. The model provides consistent, asymptotically efficient estimates for all the parameters in such models.

For the model to be well identified, the selection equation should have at least one variable that is not in the probit equation. Otherwise, the model is identified only by functional form, and the coefficients have no structural interpretation. The variables interest rate (*INTR*) and repayment period (*REPR*) (see table 1) are provided for this purpose.

For hurdle three, the tobit model is used to quantify the effects of individual, enterprise-specific and institution-specific factors on credit amount. The model assumes that the observed dependent variable Y_j for observations $j = 1, \dots, n$ satisfy:

$$Y_j = \max(Y_j^*, 0) \quad (4)$$

Where the Y_j 's are the latent variables derived from the classical linear regression model:

$$Y_j^* = \beta' X_j + U_j, \quad Y_j = \begin{cases} Y_j^* & \text{if } Y_j^* > 0 \\ 0 & \text{if } Y_j^* \leq 0 \end{cases} \quad (5)$$

Where X_j denotes vector of regressors, β' the corresponding vector of parameters. The model errors U_j are assumed to be independently normally distributed: $U_j \sim N(0, \sigma^2)$. For entrepreneurs who do not have access to credit, Y_j^* cannot be measured and is set equal to 0.

Since the tobit model parameters do not directly correspond to changes in the dependent variable brought about by changes in independent variables, Greene (2003) specifies that the marginal effect on the amount of credit due to changes in the explanatory variable is given as:

$$\frac{\partial E\left[\frac{Y_j}{X_j}\right]}{\partial X_j} = \beta \phi \left[\frac{\beta' X_j}{\sigma} \right] \quad (6)$$

The description, measurement and expected signs of variables are displayed in table 1.

Table 1: Description, measurements and expected signs of variables in the models

Variable	Description	Measurement	Sign	Model *
Dependent variables				
ACCESS	Access to credit	Dummy: 1 = entrepreneur obtained credit; 0 = otherwise		HS
CRESRC	Credit source	Dummy: 1 = formal; 0 = otherwise		HO
CREDAMT	Amount of credit	Ghana Cedi (GH¢)		TB
Independent variables				
AGE	Age of the entrepreneur	Number of years	+/-	HS/HO/TB
AGESQ	Age squared	Number of years	+/-	HS/HO/TB
EDU	Education level of the entrepreneur	Number of years of schooling	+	HS/HO/TB
BIZOWN	Type of business ownership	Dummy: 1 = sole proprietorship; 0 = otherwise	+/-	HS/HO/TB
BIZACT	Type of business activity	Dummy: 1 = trading; 0 = otherwise	+/-	HS/HO/TB
BIZAGE	Age of business	Number of years in operation	+	HS/HO/TB
BIZSIZE	Size of business	Number of employees (excluding entrepreneur)	+	HS/HO/TB
ENTGRP	Membership in entrepreneurs' association	Dummy: 1 = member; 0 = otherwise	+	HS/HO/TB
CREINFO	Entrepreneur's access to credit information	Dummy: 1 = if yes; 0 = otherwise	+	HS/HO/TB
OECTACT	Other economic activity	Dummy: 1 = if yes; 0 = otherwise	+	HS/HO/TB
PRFT	Profit of business in the previous year	Ghana Cedi (GH¢)	+	HS/HO/TB
INTR	Interest rate	Percentage	-	HO/TB
REPR	Payment period	Number of years	+	HO/TB

* denotes model in which variable is applied: HS is Heckman probit model in selection equation (Access/hurdle 1), HO is Heckman probit model in outcome equation (credit source/hurdle 2), TB is tobit model (credit amount/hurdle 3)

4. Empirical results and discussions

4.1 Socioeconomic characteristics of respondents

The socioeconomic characteristics of respondents are shown in table 2. The age of respondents ranged from 20 to 68 years with the mean age being 32 years. The number of years spent in school averaged about 6 years indicating that the higher level of educational attainment is primary specifically primary 6. The years spent in school

ranged between 0 and 20 years. Majority of respondents (69.9%) were married, 24% had never married, 5.2% widows and 1.2% divorced. The religious distribution shows that majority (58%) were Muslims while Christians represented 41.2%.

With respect to type of business ownership, those who operated sole proprietorship represented 83.2% while 12.8% operated partnership businesses and the remaining (4%) were those who engaged in cooperative businesses. With 55.2%, trading represented the highest type of activity operated followed by *pito*⁴ brewing (15.6%), followed by extractive activities such as Shea butter processing and groundnut oil extraction with 12.8%. Cooked food vending and store ownership represented 7.6% and 8.8% respectively. Age of business ranged from 1 to 18 years with a mean age of 5 years. The size of business ranged from 0 to 20 people and averaged 4 people. Profit for the immediate past accounting year ranged from GH¢35 to GH¢2,500⁵ with an average of GH¢441.

With respect to credit access, entrepreneurs who successfully had credit from both formal and informal sources represented 46.4% while 53.6% did not have credit. Access was defined by entrepreneur's proven record of applying and securing credit. Of the entrepreneurs who had credit access about 40% secured credit from formal sources (commercial banks) while about 60% secured from informal sources (microfinance institutions, non-governmental organisations) and other sources of finance). Of the informal sources, microfinance institutions provided about 51% of the informal credit source. Credit information were received from family and friends, radio/television/print sources, bank sources and other sources. About 49%, 23.5%, 17.5% and 10.1% of credit information were received from these sources respectively.

Credit amount received ranged from a minimum of GH¢200 to a maximum of GH¢7,500 with an average amount of GH¢1,096.12. Repayment period ranged from 3 months to 5 years with an average of 1.4 years. About 32% engaged in other economic activities aside the running of their businesses. The mean level of interest was about 30% per annum. Interest rate ranged from 10% to 35% per annum. For the 53.6% of those who did not receive credit, 15.7%, 70.9% and 13.4% indicated no knowledge, inadequate collateral and high interest rate respectively as reasons for not accessing credit.

⁴ *Pito is a sorghum-based local alcoholic beverage common in northern Ghana. It is golden-yellow to dark-brown in colour with taste varying from slightly sweet to sour and contains lactic acid, sugars, amino acids as well as some vitamins and proteins.*

⁵ *The exchange rate as quoted by www.xe.com as at 15/05/2014 (the last day of data collection) was US\$1.00 = GH¢2.902.*

Table 2: Socioeconomic characteristics and descriptive statistics of variables

Qualitative Variables		Quantitative Variables				
Variable	Freq.(percent)	Variable	Mean	Std Dev.	Min	Max
Access to credit:		Credit amount	1096.121	1094.753	200	7500
• Received	116(46.4)					
• Not received	134(53.6)					
Source of credit:		Age	32.284	7.301	20	68
• Formal	46(39.7)					
• Informal	70(60.3)					
Marital status:		No. of years school	6.364	5.541	0	20
• Married	174(69.6)					
• Single	60(24.0)					
• Widows	13(5.2)					
• Divorced	3(1.2)					
Religion:		Age of business	4.575	3.022	1	18
• Muslims	145(58.0)					
• Christians	103(41.2)					
• Traditional	2(0.80)					
Type of ownership:		Size of business	3.54	2.940	0	20
• S. proprietor	208(83.2)					
• Partnership	32(12.8)					
• Cooperative	10(4.0)					
Type of activity:		Profit	440.932	419.469	35	2500
• Trading	138(55.2)					
• Pito brewing	39(15.6)					
• Extractive	32(12.8)					
• Cooked food	19(7.6)					
• Store	22(8.8)					
Credit information:		Repayment period	1.403	0.973	0.3	5
• Family/friend	73(49.0)					
• Radio/TV/print	35(23.5)					
• Bank	26(17.5)					
• Other	15(10.1)					
Other econ. activity:		Interest rate	28.966	3.281	10	35
• Engaged	79(31.6)					
• Otherwise	171(68.4)					
Reasons for not getting credit:						
• Knowledge	21(15.7)					
• Collateral	95(70.9)					
• Interest rate	18(13.4)					

Source: Field survey data, 2014

4.2 Determinants of credit access (hurdle one) and credit source (hurdle two)

Results on the determinants of credit access and credit source are presented in table 3. All the explanatory variables jointly explain the probabilities of accessing credit and credit source as indicated by the Wald test which is significant at 1%. Also, the likelihood ratio test of independent equations between the access and source equations rejects the null hypothesis of independent equations at 5% level of significance. This implies that if these two equations were estimated separately the results would have yielded biased estimates. Therefore, the probit model with sample selection is superior to the univariate probit models.

Among the eleven variables estimated in the access model eight were significant namely age of entrepreneur, age squared, number of years in school, age of business, size of business, access to credit information, other economic activity and lag profit. Type of ownership, type of activity and membership in entrepreneurs' group were not significant in determining access to credit. For the thirteen variables estimated in the source model, age of entrepreneur, age squared, number of years in school, size of business, access to credit information, lag profit and repayment period were the significant determinants of credit source.

Age of an entrepreneur is a positive determinant of access to credit. This means that as the age of an entrepreneur increases she is more likely to participate in the credit market. As age increases by one year, the probability of participation increases by about 20%. This is consistent with the finding of Sekyi *et al.* (2014) who argue that older entrepreneurs are deemed credit worthy by financial institutions because of their likelihood of wealth accumulation which serve as collateral. Also, older entrepreneurs could have more social network or social capital hence more access (Tang *et al.*, 2010). This result is also consistent with the observation made by Mpuga (2008). However, age squared is negatively related with the probability of credit market participation. This implies the existence of a quadratic relationship between age and demand for credit. Age therefore has a positive effect on credit market participation up to about 37 years⁶. After age 37, age turns to negatively affect credit market participation. This finding supports Eze *et al.* (2009) who argued that as the age of respondents increases, the more risk averse they become and the less their productivity.

Conditioned on participation, older entrepreneurs are more likely to source credit from formal than informal credit markets. For an additional year of an entrepreneur's age, the probability of securing credit from formal source increases by about 3%. This is consistent with the finding of Sekyi *et al.* (2014) and Kimuyu and Omiti (2000) but contrary to Zeller (1994). The estimate could also be attributed to older

⁶ Calculated from estimates in table 3 as coefficient of age divided by -2 times coefficient of agesquared in hurdle 1

entrepreneurs' experience in the credit market and experience in running their enterprises as well as the possession of more social networks and capital which enable them to satisfy the requirements of formal financial institutions. However, the negative effect of age squared implies that for an additional year of an entrepreneur, the likelihood of participating in the formal market increases up to 36 years⁷ beyond which age turns to negatively affect the likelihood of sourcing credit from formal financial institutions.

Table 3: Heckman probit estimates of determinants of access and source of credit

Variable	Access		Source	
	Coefficient	Marginal effect	Coefficient	Marginal effect
CONSTANT	-15.9551*** (1.9301)		16.1513*** (3.6897)	
AGE	0.5061*** (0.1263)	0.1995	0.4637** (0.2187)	0.0268
AGESQ	-0.0069*** (0.0019)	-0.0027	-0.0064* (0.0034)	-0.0004
EDU	0.1034*** (0.0248)	0.0408	0.1621*** (0.0378)	0.0094
BIZOWN	-0.1439 (0.2766)	-0.0571	-0.5801 (0.3918)	-0.0495
BIZACT	-0.1683 (0.2343)	-0.0663	-0.5588 (0.3517)	-0.0354
BIZAGE	0.1388*** (0.0513)	0.0547	0.0460 (0.0530)	0.0027
BIZSIZE	0.1057** (0.0425)	0.0417	0.2089*** (0.0640)	0.0121
ENTGRP	0.4151 (0.2656)	0.1641	-0.4755 (0.3814)	-0.0232
CREINFO	1.5671*** (0.2464)	0.5458	1.1470*** (0.4163)	0.0625
OECTACT	1.1290*** (0.2576)	0.4270	-0.0658 (0.4066)	-0.0034
PRFT	0.7270*** (0.1589)	0.2866	0.7376*** (0.2398)	0.0426
INTR	-	-	-0.0150 (0.0593)	-0.0009
REPR	-	-	0.5108* (0.2871)	0.0295
Number of observations		250		
Censored observations		134		
Wald χ^2 (13)		284.83***		
Log likelihood		-109.0124		
Likelihood ratio test of $\rho \chi^2(1)$		5.57**		

Source: Regression estimates from field survey data, 2014

⁷ Calculated from estimates in table 3 as coefficient of age divided by -2 times coefficient of agesquared in hurdle 2

Note: standard errors in parenthesis. *significant at 10%, **significant at 5%, ***significant at 1%

Number of years spent in school is a significantly positive determinant of the probability of accessing credit. This is interpreted to mean that women entrepreneurs who have higher levels of education are more likely to obtain credit when they apply. For every year spent in school, the probability of participating in the credit market increases by about 4%. This is expected since entrepreneurs with higher levels of education are more likely to keep proper business records and prepare business plans which are usually requirements from formal financial institutions. This is consistent with the finding of Sekyi *et al.* (2014) who argued in terms of proper records, higher level of adoption and absorption of credit as possible reasons for the positive relationship. It is also consistent with the findings of Tang *et al.* (2010) and Mpuga (2008). Conditioned on participation, number of years in school is positively associated with the probability of sourcing credit from formal sources. This implies that the higher the level of education, the more likely credit would be sourced from formal financial institutions. An additional year in school increases the probability of formal credit source by about 1%. This is consistent with the findings of Sekyi *et al.* (2014), Tang *et al.* (2010), Eze *et al.* (2009) and Zeller (1994). Apart from the ability to organise and keep records, Eze *et al.* (2009) argue that an enlightened borrower is not frightened with the bottlenecks associated with the process of borrowing from formal financial institutions.

Age of business is positively related to the probability of participating in the credit market. This implies that businesses that have been in operation for relatively longer time periods are more likely to participate in the credit market than those which have been in operation for relatively shorter periods. An additional year of an enterprise's life, the probability of participation increases by 5%. A plausible reason for this observation could be attributed to business sustainability. Businesses that have been in existence for long are more sustainable hence more credit worthy than those at their infant stages. Another reason could be that long operated businesses are more experienced in credit dynamics and credit utilisation which could ensure rapid loan repayment. As a result, credit institutions are more willing to grant loans to these long operated businesses without having to worry about loan default. This finding is consistent with the finding of Kiboki *et al.* (2014) who argue that as enterprises grow and expand they need more financing and are also able to sustain loan repayment. However, age of business does not influence the credit source.

The size of the business is positively associated with the probability of participating in the credit market. This means that businesses with more employees are more successful in securing credit. An additional employee a business adds increases the probability of participation by 4%. Size is an indicator of the economic muscle of a business. Most financial institutions would be unwilling to grant loans to businesses

with weak balance sheets and for that matter poor financial strength. Often, large businesses are able to utilise credit efficiently and are able to reach their full potentials and obtain the benefits that enable them to pay back their loans. This finding is consistent with the finding of Kiboki *et al.* (2014) who considered size of business as performance indicator. They argued that performance information is useful to financial institutions in determining the ability of an enterprise to repay the borrowed funds. With respect to credit source, conditioned on participation, businesses with more employees are more likely to participate in the formal credit market with a probability increase of 1% for every employee added. Perhaps, formal sources of credit are more demanding of collateral requirements than informal sources. Since size of a business is a function of sustainability and economic viability which could serve as proxies for collateral, formal sources would be more willing to extend credit to large businesses.

Credit information is positively related to the probability of participating in the credit market. Entrepreneurs who had access to information on credit were more likely to participate than those without credit information. Those with information participate about 55% more than those without information. Perhaps, credit information not only ensures targeting of application but also expose basic requirements to meet in order to be successful. Conditioned on participation, entrepreneurs with credit information are more likely to participate in the formal credit market. Those with credit information are about 6% more likely to source credit from formal credit market than those without information. Loan advertisements are more proactive with formal financial institutions than informal ones and this could be a possible reason for this observation.

Lag profit is expectedly positively related to the probability of participating in the credit market. For an additional GH¢1 profit made, the probability of participating in the credit market increases by about 29%. Generally, loans are paid back from the proceeds of the business. Profit is one of the principal sources of business proceeds. Therefore, record of previous profits is one the fundamental information financial institutions look out for in granting credit. This is consistent with the finding of Kiboki *et al.* (2014) who see profit as performance indicator used by financial institutions to determine client repayment ability. Conditioned on participation, lag profit is significantly positive to the probability of securing credit form formal sources. This implies that businesses with past records of higher profits are more likely to obtain credit from formal sources. For an additional GH¢1 profit made, the probability of participating in the formal credit market increases by about 4%. The higher the profit of an enterprise the more confident a bank is in granting credit and the more likely the entrepreneur would repay the loan. This therefore serves as collateral since formal sources would be interested in the performance of a business before granting

credit. In as much as an informal source would also seek such information, formal sources are more susceptible.

Repayment period has a positive effect on the probability of sourcing credit from the formal credit market. An additional year of repayment period increases the probability by about 3%. This is expected because formal financial institutions usually have longer repayment periods than informal institutions. This is in tandem with the observation made by Togba (2009) who contended that people consider repayment period of loan before borrowing from a particular source. Since formal sources usually have higher periods, this finding is expected.

4.3 Determinants of credit amount (hurdle three)

Table 4 presents the results of the determinants of credit amount. The likelihood-ratio test is statistically significant at 1% indicating that the explanatory variables in the model jointly explain credit amount. Significant determinants of credit amount are type of business activity, size of business, membership in entrepreneurship group, lag profit, interest rate and repayment period. Type of business activity is positively related to credit amount indicating that entrepreneurs who engage in trading activities receive about 14% more than those who engage in other activities such as extractive, pito brewing and cooked food vending. A possible reason supporting this observation is that trading activities are considered profitable ventures that yield returns quickly than the other activities. So, entrepreneurs in such trading ventures are capable of managing larger credit amounts with less risk of default. Also, trading activities ensure diversification of funds than other business activities making it less risky.

Size of business has a positive effect on credit amount. This implies that an additional employee in a business increases credit amount by 6%. As already argued, the larger the business, the more stable and sustainable it is and hence could easily repay loans than smaller businesses. Membership in entrepreneurship group is positively related to credit amount. Entrepreneurs who belong to business groups receive 14% more than those who do not belong to such groups. Group membership is a function of joint liability and enhances internal self-monitoring among individuals and hence the ability to handle larger amounts of credit. This concurs with the finding of Kimuyu and Omiti (2000) who found that entrepreneurs who belong to a support group borrow more than those who do not.

Lag profit is positively associated with credit amount received. An additional GH¢1 of lag profit increases credit amount by about 12%. Profit is a significant indicator of credit worthiness and subsequently the amount of credit. Interest rate is positively related to credit amount with an increase in interest rate by 1% increasing credit amount by 3%. This is unexpected since interest rate is the cost of borrowing and contrary to the finding of Tang *et al.* (2010). Probably, large credit amounts have

inelastic demand such that high interest rates do not preclude most entrepreneurs from borrowing such amounts.

Table 4: Tobit estimates of determinants of credit amount

Variable	Coefficient	Standard error	Marginal effect
CONSTANT	-3036.512**	1314.813	
AGE	15.3677	73.54945	0.0102
AGESQ	-0.1692897	1.1028	-0.0001
EDU	2.9506	9.5634	0.0020
BIZOWN	-90.3538	135.0715	-0.0619
BIZACT	212.7641**	103.1352	0.1398
BIZAGE	-5.408312	14.3720	-0.0036
BIZSIZE	96.1134***	17.3419	0.0642
ENTGRP	205.5968**	103.957	0.1419
CREINFO	-25.4172	145.0875	-0.0170
OECACT	50.1820	104.3016	0.0338
PRFT	175.6985**	71.3464	0.1173
INTR	43.7488***	8.1625	0.0292
REPR	656.0429***	76.1496	0.4381
Number of observations	250		
Likelihood-ratio χ^2 (13)	424.86***		
Pseudo R-square	0.1928		
Log pseudo likelihood	-889.2926		

Source: Regression estimates from field survey data, 2014

Note: *significant at 10%, **significant at 5%, ***significant at 1%.

Repayment period has a positive effect on credit amount. An additional year of repayment period increases credit amount by 44%. This is expected because the longer the repayment period, the more time it provides entrepreneurs to fully utilise the credit and increase returns on investment thereby reducing default rate.

5. Conclusion and policy implications

This study sought to examine the characteristics of women entrepreneurs and their enterprise-specific characteristics that influence their credit access, credit source and credit amount credit. The probit model with sample selection was used to simultaneously analyse the determinants of credit market participation and credit source. The tobit model was used to analyse the determinants of credit amount. The results indicated that being a woman entrepreneur is not a prerequisite for accessing credit. The characteristics of the entrepreneur and the enterprise such as age of entrepreneur, number of years in school, age of business, size of business, access to

credit information, other economic activity and lag profit were the major determinants of credit access. This presents a challenge for policy makers since only a moderate number of entrepreneurs had access to credit. One would have expected that credit would be handy for women who have broken through the business platform. Another area of interest is that microfinance still remains the highest provider of credit to women entrepreneurs.

The study also showed that age of entrepreneur, number of years in school, size of business, access to credit information, lag profit and repayment period were the main determinants of credit source. The variables that simultaneously influenced access and credit source were age of entrepreneur, number of years in school, size of business, access to credit information and lag profit. For credit amount, type of business activity, size of business, membership in entrepreneurship group, lag profit, interest rate and repayment period were the main determinants. Two variables namely size of business and lag profit were significant determinants at all the three hurdles.

Recognising the significant determinant of education of women entrepreneurs in accessing credit, we recommend that the NBSSI should institutionalise periodic training programmes for owners of SSEs in the areas of basic business planning and accounting practices such as proper record keeping and cash flow management. To ensure effective participation of women entrepreneurs in educational programmes, NBSSI should embark on rigorous advertisement of these programmes. This could be complemented by comprehensively registering all women entrepreneurs. Also, the probability of securing credit is higher for older and larger businesses and those with higher profits. The implication is that policymakers should formulate policies aimed at the growth of SSEs in order to increase their access to credit. We recommend that the Business Advisory Centre of the NBSSI should be more proactive and well-resourced to enable it perform its core mandate of facilitating the growth of micro and small scale industries.

Educational attainment, business size and level of profit were major determinants of sourcing credit from formal financial institutions. Therefore, there is the urgent need to expand capacity of informal financial sector to cater for entrepreneurs with low educational levels, small sizes and low profits. Enterprises that are at the embryonic stage and for that matter exhibit these characteristics are often constrained in sourcing credit from the formal financial institutions. Policies aimed at ensuring consistent and sustainable growth, and efficient operation of the informal financial sector should be welcomed. In as much as the formal financial sector cannot be down-played, its contribution should be considered subsidiary of the informal sector because of the characteristics surrounding most women.

Alternatively, policymakers should put in measures to ensure that entrepreneurs with low educational levels, low profits, small sizes and younger businesses gain

access to formal credit market. One area of policy could be credit insurance scheme to shield financial institutions against high risks involved in dealing with such SSEs.

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Appendix

1. Questionnaire for enterprise survey

This questionnaire is to solicit information on “determinant of access to credit, source of credit and credit amount among female small scale enterprise owners in the Upper West Region of Ghana.” All information provided will be treated confidential and will be used solely for the purpose of the study.

If you have questions about the survey, you may please contact paulbata@yahoo.com and benabu13@gmail.com or call 0246019108. Thank you very much for your time and support.

Interviewer _____

Date of interview ____/____/2014

District:

Wa municipal []

Jirapa district []

Community/Village _____

Questionnaire Number _____

Name of entrepreneur _____

Name of enterprise _____

SECTION A: INDIVIDUAL CHARACTERISTICS

1. What is your age (in years)?

2. What is your marital status? 01 Never married [] 02 Married [] 03 Divorced []

04 Separated [] 05 Widow []

3. What is your level of education? 01 No formal education [] 02 Primary [] 03 MSLC/JHS [] 04 SHS [] 05 Technical/Vocational [] 06 Training College/Polytechnic/Diploma [] 07 University (bachelor) [] 08 University (graduate and above) [] 09 Other [] specify.....

4. How many years did you spend to reach this level of education?

5. Are you the head of your household? 01 Yes [] 02 No []

6. How many people are there in your household?

7. What tribe are you? 01 Wala [] 02 Dagaaba [] 03 Sissala [] 04 Chakali []

05 Lobi [] 06 Others [] specify.....

8. What is your religious affiliation? 01 Islam [] 02 Christianity [] 03 Traditional [] 04 Other [] specify.....

SECTION B: ENTERPRISE CHARACTERISTICS

9. When was your business started? If you cannot remember the exact date, state the year. Day..... Month..... Year.....

10. Have you registered your business? 01 Yes [] 02 No [] (If no, move to Q12)

11. If yes to Q10, which department did you register? 01 Registrar's General Department [] 02 NBSSI [] 03 NGO [] 04 Other [] specify.....

12. If no to Q10, why have you not registered your business?

13. What was the number of employees in your business (excluding yourself) in the 2013 accounting year?

14. Do you have any group(s) or association(s) (a group or association that exists to build capacity and enforce collective bargaining power) made up of only enterprise owners?

01 Yes [] 02 No [] (If no, move to Q19)

15. If yes to Q14, did you belong to any enterprise group or association in the 2013 accounting year? 01 Yes [] 02 No [] (If no, move to Q18)

16. If yes to Q15, give the name of the group or association.....

17. If yes to Q15, how often did your group meet to discuss issues related to business? 01 Weekly [] 02 Fortnightly [] 03 Monthly [] 04 Quarterly [] 05 Annually []

18. If no to Q15, why didn't you belong to a group or association?

19. What type of business or activities are you engaged in? 01 Trading [] 02 Extractive [] 03 Cooked food vending [] 04 Pito brewing 05 Store operator [] 06 Other [] specify.....

20. Indicate the specific activities of business identified in Q19.....

21. What is the form of ownership of your business? 01 Sole proprietorship [] 02 Partnership [] 03 Cooperative [] 04 Other [] specify (If sole proprietorship, move to Q24)
22. If partnership or cooperative business in Q21, how many people were involved as partners or cooperative members in the 2013 accounting year?
23. What relationship exist among partners or members of the cooperative business? 01 Family [] 02 Friends [] 03 Family and friends [] 04 Community member but not friend or family [] 05 Other [] specify.....
24. Did the business make profit in the 2013 accounting year? 01 Yes [] 02 No []
25. If yes to Q24, what was the level of profit (in Ghana cedi) made in the 2013 accounting year?
26. If no to Q24, what was the level of loss (in Ghana cedi) incurred in the 2013 accounting year?
27. If your answer to Q21 was 02 or 03 or 04, how did you share profit or loss made in Q25 or Q26 respectively?
28. Did you engage in any other economic activity in the 2013 accounting year apart from your business? 01 Yes [] 02 No []
29. If yes, what activity or activities were you engaged in?

SECTION C: CREDIT INSTITUTION CHARACTERISTICS

30. Have you heard of any lending agency before? 01 Yes [] 02 No [] (If no, move to Q33)
31. If yes to Q30, which of the following lending agencies have you heard of? 01 Formal banks [] 02 MFIs [] 03 NBSSI [] 04 District Assembly Common Fund [] 05 NGOs [] 06 Others [] specify.....
32. What was the source of the information in Q30? 01 Friends [] 02 Family [] 03 Radio/TV programs [] 04 Banks [] 05 NGOs [] 06 Others []specify
33. Was your application for loan in the 2013 accounting year approved and hence the credit granted? 01 Yes [] 02 No []
34. If yes to Q33, what was the source of the credit? 01 Commercial bank [] 02 Rural bank [] 03 NBSSI [] 04 Microfinance [] 05 NGO [] 06 Family and friends [] 07 ROSCA [] 08 Other [] specify
35. If yes to Q33, what was the amount of the credit (in Ghana cedi)?
36. Was collateral required to secure the credit? 01 Yes [] 02 No []
37. If yes to Q36, what was the collateral required?

38. What was the stated interest rate on the credit? per month [] per annum [] per other [] specify.....
39. What was the credit repayment period or duration of loan (in weeks, months or years)?
Weeks..... Months..... Years.....
40. If your answer to Q30 was yes, did the information you received about lending agency influence your decision to apply for credit? 01 Yes [] 02 No []
41. If no to Q33, what reason(s) was/were given for rejection of your application or you opting out of receiving credit? 01 No knowledge [] 02 Inadequate collateral [] 03 High interest rate [] 04 Previous debt problems [] 05 Other [] specify.....